Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (currently amended) A system to determine for a sample the extent to which it belongs to a class so that a diagnostic indication of a health state can be given, comprising:

    -   a memory unit for storing the signals of an electromagnetic spectrum obtained by a detector, said signals being generated by measuring an unknown sample;

    -   an analyzer unit for

        (i)   generating a sample parameter ~~by means of~~using a multivariate analytical method based on the signals of the electromagnetic spectrum; and (ii) allocating the sample parameter to a data record calculated by interpolation between at least one part of a first data and at least one part of a second data, ~~whereby~~wherein

            the first and second data are allocated to a first and second class, respectively, ~~and~~

            the first data comprises a first parameter ~~which has been~~ generated on the basis of electromagnetic spectra of known samples belonging to the first class ~~by means of~~using the multivariate analytical method so that a reliable allocation of samples to the first class on the basis of the first parameter is possible, and

            the second data comprises a second parameter generated on the basis of electromagnetic spectra of known samples belonging to the second class by means of the multivariate analytical method, so that a reliable allocation of samples to the second class is possible on the basis of the second parameter, and

            ~~and the analyzer unit is also suitable for~~(iii) determining a proportion value for the sample parameter regarding at least a part of the data record, ~~whereby~~wherein the proportion value reflects a relation of the sample parameter to a class in such a way that the

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2

PCT/EP2004/003613
Attorney Docket No. 05-745

extent to which the unknown sample belongs to a class is determined~~,~~; and

- an output unit for display of the relation of a sample to a class.

2. (original) The system according to claim 1,
wherein the first and second parameters are stored in a permanent memory of the memory unit.

3. (original) The system according to claim 1,
wherein the data record is stored in a permanent memory of the memory unit.

4. (currently amended) The system according to ~~any one of the preceding claims~~claim 1,
wherein data for more than two classes is stored.

5. (currently amended) An analysis system comprising a system according to ~~any one of the preceding claims~~claim 1, further comprising a beam source for irradiating a sample with electromagnetic radiation.

6. (original) The analysis system according to claim 5,
wherein the radiation source emits electromagnetic radiation in the IR range.

7. (currently amended) The ~~analysis system having a~~ system according to ~~any one of the preceding claims~~claim 1, further comprising a detector for detecting radiation interacting with the sample.

8. (original) The analysis system according to claim 7,
wherein the detector detects signals in the range of 1 μm to 25 μm.

9. (currently amended) A method of analyzing an electromagnetic spectrum, wherein a proportionate relation of the electro-magnetic spectrum to a class is determined to provide a diagnostic indication for a health status, comprising:

- ~~determination of~~determining a sample parameter ~~by means of~~using a multivariate analytical method based on an electromagnetic spectrum generated by measurement of an unknown sample~~,~~;

- allocating the sample parameter to a data record calculated by interpolation between at least one part of first data and at least one part of second data, ~~whereby~~wherein

> the first and second data are allocated to a first and second class, respectively,

> ~~and~~the first data comprises a first parameter which has been generated on the basis of electromagnetic spectra of known samples belonging to a first class ~~by means of~~using the multivariate analytical method so that a reliable allocation of samples to the first class is possible on the basis of the first parameter, and

> ~~and~~the second data comprises a second parameter generated on the basis of electromagnetic spectra of known samples belonging to the second class by means of the multivariate analytical method so that a reliable allocation of samples to the second class is possible on the basis of the second parameter~~,~~; and

- determining a proportion value for the sample parameter regarding at least a part of the data record, the proportion value reflecting a relation of the sample parameter to a class in such a way that the extent to which the unknown sample belongs to a class is determined.

10. (currently amended) The method according to claim 9,
wherein the first class characterizes ~~the~~a health status of a patient having diabetes and the second class characterizes ~~the~~a health status of a patient not having diabetes, and the data record includes a sample parameter generated by a sample of a patient having metabolic syndrome.

11. (original) The method according to claim 9,
wherein the interpolation is performed between the first parameter and the second parameter.

12. (original) The method according to claim 9,
wherein the relation of a sample parameter of a class is calculated as a percentage proportion.

13. (original) The method according to claim 9,
wherein a correlation is formulated between the data record and the progression of a disease.

14. (original) The method according to claim 9,
wherein a linear discriminance analysis is performed as part of the multivariate analytical method.

15. (original) The method according to claim 9,
wherein neural networks are used as part of the multivariate analytical method.

16. (original) The method according to claim 9,
wherein the diagnostic indication contributes toward early detection of cancer-induced and TSE-induced pathological anomalies.

17. (currently amended) The system according to claim 1, configured to employ a method of analyzing an electromagnetic spectrum, wherein a proportionate relation of the electromagnetic spectrum to a class is determined to provide a diagnostic indication for a health status, the method comprising:

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5

PCT/EP2004/003613
Attorney Docket No. 05-745

- determining the sample parameter using the multivariate analytical method based on an electromagnetic spectrum generated by measurement of an unknown sample;

- allocating the sample parameter to the data record calculated by interpolation between at least one part of first data and at least one part of second data; and

- determining the proportion value for the sample.
  ~~suitable for a method according to any one of claims 9 through 16.~~

18.   (currently amended)   The method according to claim 9, being executed on a system comprising:

- a memory unit for storing signals of the electromagnetic spectrum obtained by a detector, said signals being generated by measuring the unknown sample;

- an analyzer unit; and

- an output unit for display of the relation o f a sample to a class.
  ~~wherein a system according to any one of claims 1 through 4 is used.~~

19.   (currently amended)   A data medium having a data record for analysis of a sample, comprising

- a data record which is calculated by interpolation between at least one part of first data and at least one part of second data, wherein

   the first data and the second data are allocated to a first class and a second class, respectively, ~~and~~

   the first data comprises a first parameter which has been generated on the basis of electromagnetic spectra of known samples belonging to the first class by means of a multivariate analytical method so that a reliable allocation of samples to the first class is possible on the basis of the first parameter, and

   the second data includes a second parameter generated on the basis of electromagnetic spectra of known samples belonging to the second class

by means of the multivariate analytical method so that a reliable allocation of samples to the second class is possible on the basis of the second parameter, ~~whereby~~wherein

- an allocation of a sample parameter generated by means of the multivariate analytical method on the basis of an electromagnetic spectrum of an unknown sample to the data record is possible.

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7

PCT/EP2004/003613
Attorney Docket No. 05-745